

## New technology helps musicians practice better and avoid injury



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Learning a musical instrument to a high standard is a lot about maintaining the correct body shapes and posture. Getting your movements and positions correct is the secret to producing the best tone, to mastering technically challenging music and to avoiding injuries that can plague professional musicians. Often a teacher will instruct their pupils to practise in front of a mirror, watch their bowing arm, make sure their elbow is bent and keep their back straight.

Now there is a new assistant to help with the continual monitoring. Arthur Carabott, musician, developer and designer, has developed [Musician's Mirror](#) to help his fellow players practice better, overcome bad habits and avoid injury. The computer vision based system watches its users practice and feeds back instantly, sounding warning notes to make them aware when they slip into bad habits. The system uses a camera, typically mounted on the music stand, to track the musicians overall posture, or any part of their body that they want to concentrate on. In addition to instant feedback, the system will also monitor positions and behaviors over the longer term, with heat maps that track progress over time.

This innovative new idea has the potential to make practice more effective and safer. As Carabott puts it "Musicians don't talk about injury the same way that athletes do... The injuries can build up over months or years, and are not reported until they start preventing someone from being able to play." He has already tested a prototype of the device at the [Royal College of Music](#) and is currently experimenting with ways of incorporating Musician's Mirror into a smartphone or tablet, making it

more widely available to students and teachers.

This kind of instant feedback technology is reaching out into new fields of physical activity all the time. We have seen [cricket bats that give feedback on technique](#) and [smart running shoes that help runners avoid injury](#), for example. This camera-based feedback could potentially roll out to other activities. Where else is it important to maintain good posture? What other uses could this technology be applicable to?

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